Concordia University
Dept. of Computer Science & Software Engineering

Comp 353- Databases
Warm-Up Project

Title: A Simple database for the COVID-19 Public Health Care Vaccination System
Due: July23, 2021 at 23:55
Maximum Mark: 6%

In this project, you and your group are required to develop a miniature database application system, described below, and evaluate number of queries and transactions against the database. For this, you should use the faculty MySQL DBMS through the ID assigned to your group, which is string of the form "xjc353_1", for some letters x and y. The Lab Instructors during the lab sessions will help you resolve possible problems you may have, for instance, connecting or interacting with the DB server.

Project Description

The application is to develop a database system to help the Public Health Care System keep track of the population's vaccination status against COVID-19. The system is called COVID-19 Vaccination System (C19VS).

The application must maintain personal information about the population involved in the vaccination process against the COVID-19 pandemic. The personal information includes first-name, last-name, date of birth, medicare card number, telephone-number, address, city, province, postal-code, citizenship and email address. Also, the application must maintain information whether the person being vaccinated has been infected in the past or not, and if she/he has been infected the application need to store the date of the infection. A person could be infected more than once. Also, the application must maintain information about the type of Vaccination is given and the dose number as well with the date and location of each dose given. The type of vaccinations could be Pfizer, Moderna, AstraZeneca, Johnson & Johnson, etc. Also, the dose number could be 1, 2, or more. For example: Alfred McDonald could have taken the first vaccination dose Pfizer on the 20th of January 2021 at CLSC Montréal South, and the second vaccination dose Moderna on the 25th of April 2021 at Olympic Stadium Montréal. The application must maintain the list of approved vaccinations as well as the date of approval of the vaccination and a description of the vaccination type. A vaccination type could have two statuses: SAFE and SUSPENDED. If status is set to SUSPENDED then the application must maintain the date of suspension and only vaccination type with SAFE status could be given. The application must maintain information about Public Health facilities where the vaccination is performed. Information about the Public Health facilities could include name, address, phone number, web address, type (Hospital, clinic or special installment).

Other information for people includes Age Group. A person can belong to only one Age Group. The age Group for a person is decided at the date of the vaccination. This is needed to decide who can take a vaccination and who must wait before taking a

vaccination. There are 10 Age Groups as follows: Age Group 1 is for people whose age is 80 years old and above; Age Group 2: for people between 70 and 79 years old; Age Group 3: for people between 60 and 69 years old; Age Group 4: for people between 50 and 59 years old; Age Group 5: for people between 40 and 49 years old; Age Group 6: for people between 30 and 39 years old; Age Group 7: for people between 18 and 29 years old; Age Group 8: for people between 12 and 17 years old; Age Group 9: for people between 5 and 11 years old and Age Group 10: for people between 0 and 4 years old. At any moment, only one age group value is set in the application which could be changed over time. A person can be vaccinated if she/he belongs to a group age that is smaller or equal to the current group age value set in the application.

These are the minimum requirements for your application. More details could be added through more research and investigations from your part.

1. Express the COVID-19 Vaccination System in the E/R model. Use arrows to indicate the constraints on the relationships. Underline the key attributes for the entity and relationship sets.
2. Convert the E/R diagram into at least four relations: Person, Vaccination, Vaccination Facility, Group Age. Other relations might be needed to capture all the requirements.
3. Write SQL scripts to create the COVID-19 Vaccination System database and populate the tables with appropriate data. Also write SQL scripts of the queries and transactions given below. Include at least 10 representative tuples in each table so that the result of each query includes at least one tuple. Note that the Graphical User-Interface (GUI) is not required in this project but encouraged.

    i. Get details of all the people who got vaccinated at least one dose and are of group ages 4 to 10 (first-name, last-name, date of birth, email, phone, city, date of vaccination, vaccination type, been infected by COVID-19 before or not).
    ii. Get details of all the Vaccination facilities in Québec (name, address, phone number, web address, type).
    iii. Get details of all the people who got vaccinated at the Olympic Stadium in Montréal in January 2021 (first-name, last-name, date of birth, email, phone, city, date of vaccination, type of vaccination, group age).
    iv. Provide a description of all the vaccinations used in Québec (Name of the vaccination, date of approval of the vaccination, current status of the vaccination, total number of people vaccinated with the vaccination).
    v. Get details of all the people who got vaccinated with a vaccination that is currently suspended (first-name, last-name, date of birth, email, phone, city, date of vaccination, vaccination type, date of suspension of the vaccination).
    vi. Provide a report of people who got vaccinated by city in all the cities in the province of Québec. The report should include the city name and the number of people vaccinated in each city.

Project Report: Structure and Contents

Each group should submit their project report through Moodle before the deadline, one report per group. The report should include the following parts:

(1) DESIGN: The E/R diagram of the design of the database given in the project description (or a revised version, if deemed necessary).

(2) The SQL statements formulated and used to create the database. Pick appropriate data types for the attributes and include them in your report.

(3) The SQL statements formulated to express the required queries and transactions mentioned.

(4) Populate each table in the database with at least 10 representative and appropriate tuples.

(5) For each relation **R** created in your database, report the result of the following SQL statement:

SELECT COUNT(*) FROM R;

A Final Note: Your report should also include the originality FORM as the cover page that is signed by EVERY member of the group. The cover page should also include the name and ID of every member of the group members together with the "Group Account" assigned by Stan's email confirmation of your group registration.